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ABSTRACT

This overview acquaints prospective users with the School Finance Equalization Management System (SFEMS), a computer-based system designed to answer questions about state aid distribution. SFEMS can determine such things as the current pattern of aid distribution, the current pattern of tax effort, or the effect of alternative expenditure and taxation systems. The system is composed of three phases: data collection, aid allocation, and analysis. The data collection component contains all data relevant to the problems being addressed. In the aid allocation component, alternative school finance plans are simulated and new expenditure levels and tax rates are predicted. In the analysis phase, allocation alternatives are compared and evaluated. Several formulas can be used to equalize the allocation of state aid. These are guaranteed valuation, percentage equalizing, district power equalizing, foundation programs, or a general form. State aid formulas that are not equalizing include minimum aid formulas, save-harmless provisions, and categorical aid. The effects of all these allocation formulas can be analyzed through a sequenced report, a frequency report, or a Gini report. (Author/JM)

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SCHOOL FINANCE EQUALIZATION MANAGEMENT SYSTEM

AN

OVERVIEW

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The Education Policy Research Institute (EPRI) is a new research division of the Educational Testing Service. It was founded on January 1, 1975 by Joel S. Berke with his colleagues from the Washington offices of the Educational Finance and Governance Center of Syracuse University Research Corporation. Since then, new staff members have been added in both the Washington and Princeton offices.

The Institute addresses policy issues central to educational finance and governance such as equity in resource allocation, uses of educational assessment, and effectiveness of alternative educational strategies. These problems are approached from an interdisciplinary perspective: educational, administrative, sociological, political, economic, legal, and anthropological.

EPRI maintains working relationships with the Columbia Teachers College, the Eagleton Institute of Rutgers University, the Education Law Center, Inc., the Legislators' Education Action Project of the National Conference of State Legislatures, the National Lawyers' Committee for Civil Rights Under Law, the New Jersey Education Reform Project, and the Woodrow Wilson School of Princeton University.

Joel S. Berke, Director

Introduction

An effective information system should provide answers to users' questions as precisely and clearly as possible. The School Finance Equalization Management System (SFEMS) allows the user to create a research design with a maximum of individual control and a minimum of system restrictions. The user has the ability both to frame the research question, and to determine the shape of the resulting output. The value judgments on which the design of the research is based are those of the user, not those imposed by the developers of the system.

SFEMS is composed of three components or phases, and two types of data files. The independence of SFEMS' three phases increases the system's flexibility. Although most research designs will employ all three phases, a user need invoke only the phase or part of a phase which is required to obtain the desired information.

What Can You Do With SFEMS?

SFEMS' fundamental application is to school finance research. The system can be used to answer a wide range of questions. Among them are:

> What is the pattern of aid distribution under your present school funding law?
>
> What proportions go to cities, suburbs, rural areas?
>
> Do districts making a greater tax effort receive recognition? Or is spending related primarily to the wealth of the community?
>
> Does the law concentrate funds on existing and/or potential educational problems?

Is your present school funding law in accordance with current legal concepts of equity in taxation and equality of opportunity in educational resources?

What alternative approaches are available? How will they affect the taxation and expenditures of particular districts?

School finance study, however, is not the only use for SFEMS. Since SFEMS' phases are independent, the potential uses are not limited to the traditional school finance concerns of raising and distributing funds for public education. The user may choose to design a data file which includes data elements suitable for other types of related analysis. For example, information could be included on local district budget allocations, results of student assessment programs, and a district's physical needs or equipment utilization.

Features of SFEMS

SFEMS has been designed to facilitate user control. The user instructs the system by means of a standard syntax; each instruction activates a particular option of SFEMS. Some of the options available in the system are:

1) multiple definitions of wealth, effort, and need;
2) dynamic specification of pupil weightings;
3) minimums/maximums;
4) dynamic specification of local district response behavioral assumptions both before a new plan is implemented and longitudinally;
5) longitudinal predictions;
6) multiple layouts of analyses;
7) benchmark studies which show both dollar and percentage changes in aid;
8) proportional reduction of aid;
9) counts of districts receiving aid under minimums, equalization, save-harmless and categorical programs;
10) percentiles, frequency distributions, sequenced listings, summary statistics, measures of equity such as McLoone Index and Gini coefficient.

Overview of the System

SFEMS is composed of three independent phases: Data Collection, Aid Allocation and Analysis. The function of the Data Collection Phase is the collection and storage of data. The General File -- one of SFEMS' two kinds of data files -- is the product of this Phase. Since the Data Collection Phase is independent of the rest of the system, the General File can be modified or updated whenever desired.

In the Aid Allocation Phase, alternative school finance plans are simulated and new expenditure levels and tax rates can be predicted. The data generated during the course of the Aid Allocation Phase are stored in Allocation Files. This is the second type of data file. A separate Allocation File is created for each allocation alternative. The data within these files are available for use both in the Allocation Phase itself and in the third phase of the system, the Analysis Phase.

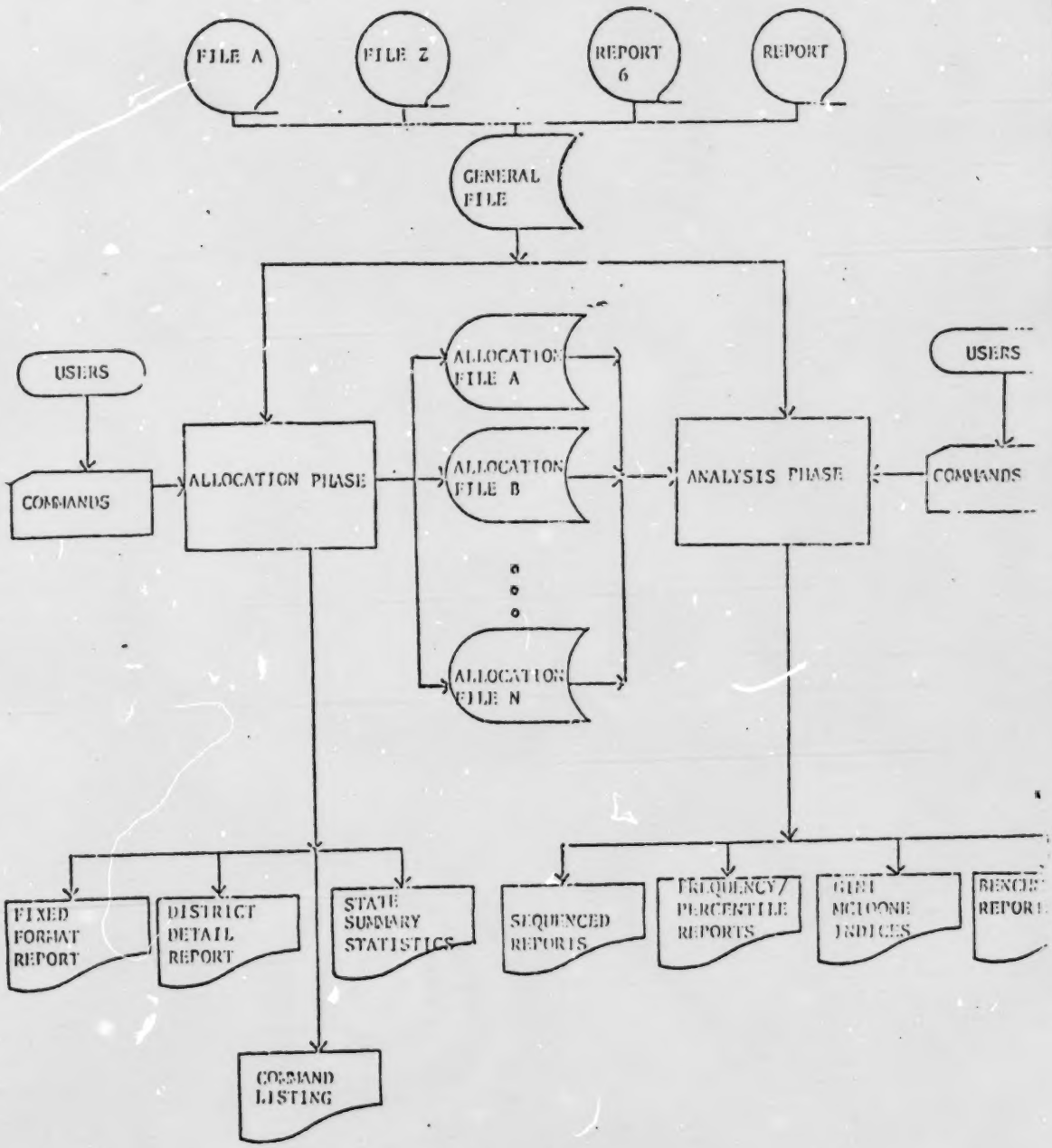
In the Analysis Phase, allocation alternatives can be compared and evaluated by means of a number of statistical and analytic techniques. Each allocation alternative can be evaluated by using a wide range of criteria. This component is not necessarily the last step in a study; in fact, use of the Analysis Phase will quite frequently precede use of the Allocation Phase.

Since the three phases of SFEMS are independent, they are used in the sequence and combination which are appropriate to the research question under study. For example, a user may wish to examine these research questions in the following sequence: 1) the present level of inequalities among district wealth, effort and need; 2) the effect of the present state aid system in overcoming these inequalities; 3) the

simulation of equalization aid alternatives; and 4) the level of inequality after a new state aid system is introduced. Steps 1 and 2 use only the General File and the Analysis Phase. Step 3 uses the General File, the Aid Allocation Phase and possibly one or more Allocation Files. Step 4 uses all three Phases.

SCHOOL FINANCE EQUALIZATION MANAGEMENT SYSTEM

SYSTEM OVERVIEW



Data Collection

SFEMS uses a General File to store the basic data elements used in the system. The General File is independent from the other phases of the system, to allow for greater flexibility and to reduce the dependency between file structure and application programming. For conducting research this General File is linked to the SFEMS Allocation and Analysis Phases. The content of the General File depends upon the nature of the user's questions and the availability of data to answer those questions. Four important points should be made concerning the data in the General File:

1) Data in the General File is stored in the aggregate; there is no per pupil data. Per pupil data can be derived for use in simulations and analyses by dividing the district aggregate by the number of pupils in the district.

2) Data elements should be carried by the system in their smallest component parts; that is, if a variable -- such as number of students -- is actually a total of several other constituent variables -- such as number of kindergarten students, number of elementary students, number of secondary students, etc. -- then the components, and not the total, should be entered in the General File. The total can be derived later by summing appropriate data elements. This approach to data storage allows for the greatest flexibility and most efficient use of the General File. The nature of the research questions will dictate precisely which data elements are relevant. Whatever the variable, however, data should be collected on the most elemental level.

3) Multiple definitions of research variables are possible in SFEMS.

There is ample space available in the General File to accommodate alternate measures of any pertinent variable. As we will explain presently, the four major school finance formulas are mathematically equivalent. Therefore, the selection of a specific formula is secondary to defining the variables of the formula -- wealth, effort, and need -- and establishing the relationships among these variables. For example, let us look at the wealth/pupil variable which exists in all of the formulas. The way in which we define wealth -- as property wealth, income wealth, or some other measure -- determines the measure of the district's ability to support education. In districts that are property rich and income poor the use of property valuation rather than income makes them look wealthy, the use of an income measure will have the opposite effect. In some districts, where property measures of wealth make the district look wealthy, income measures will make the district appear average or poor. Varying the way pupils are counted, too, can make a significant difference. Three measures -- wealth/pupils enrolled, wealth/pupils in attendance, and wealth/weighted pupils -- will yield three widely varying estimates of ability to pay, and if population is substituted for pupils the variations will be even greater.

Some data items are obvious choices for inclusion in the General File - pupils, district wealth, school tax rates and expenditures. Other factors -- class size, student characteristics, school facilities, test scores -- are less obvious choices since they are applicable only to more specific questions.

4) Data collected and calculated by and for the entire state is often slow in appearing. It is not unusual for the "most recent" fiscal data available to be over a year old. You may want to update old data by means of a growth

factor, inflation factor or similar index. From information on a small sample of districts you can determine the index which, when applied to the prior year's data, will best approximate the current year's data. This procedure can be done within SFEMS, in the Allocation Phase. SFEMS includes an alternative approach to the problem of old data. Through use of the "Multi-year Projection" the user can first simulate a new state aid plan, based on existing data, and predict new expenditure and tax rate data for the state. This projected data is stored in an Allocation File. The user is then able to use the data from this Allocation File as the basis for predicting the impact of state aid in the second year of the plan. This option is considerably more complex than application of a growth index to current data, and its function goes beyond simply updating General File data.

Allocation Phase

In the Allocation Phase of SFEMS, the required data is assembled, commands are specified and aid alternatives are simulated. In simulating an alternative aid allocation plan the essential decisions to be made focus on the formulation of the plan. In the following pages we will describe the components which make up a school finance plan -- equalization formulas, minimum aid, save-harmless provisions and categorical programs.

1. Equalization Formulas

Since the turn of the century when Cubberly first discussed the inequities in fiscal capacity among local school districts, schoolmen, academicians and state legislators have grappled with how best to remedy this problem.[1] Four major alternatives for relieving these inequities have been developed over the years -- Minimum Foundation, Percentage Equalizing, Guaranteed Valuation, and District Power Equalizing. Although these alternatives differ in their conception of the state and local role, and in the attributes of equalization which are highlighted, they all are shared cost formulas based on the same components -- tax effort, tax yield and wealth.

Although the equalizing ability of shared cost formulas based on these general approaches varies with specific implementations, in their pure form the formulas are conceptually and mathematically the same. Aid in each of these formulas is allocated in inverse proportion to wealth, which is generally measured by property valuation per pupil.

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[1] While Cubberly was a pioneer in identifying the problem, his solution, the flat grant, did not in fact take account of the disparities and therefore will not be discussed here.

In addition, various formulas highlight different attributes of equalization. For example, Percentage Equalizing highlights the state share, the Foundation Program highlights the guaranteed expenditure level, Guaranteed Valuation highlights the state guaranteed valuation and DPE highlights the effort factor.

2. Equivalence of Equalization Formulas

In this section we will show that the Guaranteed Valuation, Percentage Equalizing and District Power Equalizing programs are equivalent. Furthermore, the Foundation Program is a special case of these formulas. The equivalence is first demonstrated through the use of a general formula which employs the accepted school finance terminology -- wealth is measured by property value and the unit of analysis is pupils. Then a more universal formula is presented which allows for more comprehensive measures of wealth and need.

All of the above shared cost school finance formulas can be expressed in the following formula:

$$A_i = (1 - \frac{B_i}{B_g}) B_g t_i$$

Where

A_i is the equalization aid allocated to the district per pupil.

B_g is the state guaranteed valuation per pupil.

B_i is the equalized valuation per pupil in the district.

E_i is the district expenditure per pupil covered by the equalization program.

t_i is the computed equalization tax rate for the district:

$$t_i = \frac{E_i}{B_g}$$

Guaranteed Valuation

We begin the discussion of equivalence with the Guaranteed Valuation program. Under this program the state assures that each district can act as though it had a property value guaranteed by the state (B_g). State aid (A_i) is the difference between what would be raised under the guarantee (B_g) and what is raised by the local tax base (B_i). Therefore the formula is:

$$A_i = B_g t_i - B_i t_i$$

The proof that this is equal to the general formula will now be presented. First, the second term on the right hand side is multiplied by 1 or $\frac{B_g}{B_g}$ which results in:

$$A_i = B_g t_i \quad \frac{B_i \; t_i \; B_g}{B_g}$$

factoring out $B_g \; t_i$ we have $A_i = (1 - \frac{B_i}{B_g}) \; B_g \; t_i$ which is the general formula.

Percentage Equalizing

Under Percentage Equalizing the state assures that it will pay a specified percentage of the expenditures (E_i) in a district having average wealth per pupil. In the formula k is the local share of expenditures in the district with average wealth (B_a). The formula is generally stated as follows:

$$A_i = (1 - k \frac{B_i}{B_a}) \; E_i$$

But in this formula both k and B_a are constants, and we can find a B_g such that:

$$B_g = \frac{B_a}{k}$$

We can substitute B_g for $\frac{B_a}{k}$ in the formula (actually $1/B_g$ for $\frac{k}{B_a}$)

$$A_i = (1 - \frac{B_i}{B_g}) E_i$$

We have defined the equalization tax rate (t_i) to be equal to expenditure over guaranteed valuation:

$$t_i = \frac{E_i}{B_g}$$

$$E_i = B_g t_i$$

$$A_i = (1 - \frac{B_i}{B_g}) B_g t_i, \text{ the general formula.}$$

District Power Equalizing

District Power Equalizing assures that each district will receive an equal yield for an equal effort. This formula is usually stated as a table of guarantees commensurate with tax efforts such as:

Tax Effort (%)	Guarantee
1	$1000
2	2000
3	3000

Given a linear tax effort guarantee relationship of the form $G = ati$ where a is a constant, the guarantee for a district becomes equal to E_i. State aid is the difference between the guarantee and what is raised locally. Thus

$$A_i = E_i - B_i t_i$$

But

$E_i = B_g t_i$ where B_g has replaced a as the constant and

$$A_i = B_g t_i - B_i t_i$$

This is the Guaranteed Valuation program which we have already shown is equal to the general formula. The more general linear relationship $B = at_i + b$ also can conform to the general model but the constant b may be treated as a minimum aid provision. This will be considered in the next section.

District Power Equalizing is the first equalization program to explicitly consider the possibility of negative aid. If the district wealth is greater than the guaranteed wealth then more revenue will be raised than that assured by the state. Other programs typically ignored districts above the guarantee level. The recaptured amount is calculated as a negative A_i and will be negative when B_i is greater than B_g.

Foundation Program

Under a Foundation Program the state guarantees a fixed amount of expenditures (G) for a specific tax rate (t_s). The formula is generally stated as:

$$A_i = G - t_s B_i$$

The guarantee (G) is the state set expenditure level (E_i) for all districts.

and

$$E_i = B_g \, t_i$$

However, t_i is set by the state at t_s and in this case

$$E_i = B_g \, t_s$$

Substituting for G in the foundation formula

$$A_i = B_g \, t_s - B_i \, t_s$$

Thus the Foundation Program is a special case of the Guaranteed Valuation program where E_i and consequently t_i are state set. And therefore the Foundation Program is a special case of the general formula:

$$A_i = (1 - \frac{B_i}{B_g}) \, B_g \, t_s$$

General Form

A more universal form of the general formula can be stated as follows:

$$A_i = (1 - \frac{W_i}{W_o}) \, W_o \, t_i$$

Where W_o = the state guaranteed wealth per unit

W_i = the wealth measure in the district per unit. In this case property valuation may be enhanced or replaced as the basis for equalizing aid payments.

3. Non-Equalizing Aid

The formulas we have discussed up to this point are designed to relieve inequities in fiscal capacity among local school districts. As such, they are called "equalization formulas." Many states have additional state aid provisions which provide districts with aid for general operating expenditures, but which are not designed to overcome differences in district wealth.

Minimum Aid

A common feature of many school finance plans is "minimum aid" -- usually a dollar amount which every district is entitled to receive. There are five types of minimum aid available for specification in SFEMS. They are:

Type I - Expenditure Reducing. All districts receive the minimum amount but this amount is subtracted from aidable expenditures for the district before equalization aid is calculated.

Type II - Flat Grant. All districts receive the minimum aid amount and it has no effect on any other aid program.

Type III - Flat Grant Variation. All districts receive the minimum aid amount, but this amount is then subtracted from equalization aid, if any. Equalization aid is reduced by the amount of the minimum.

Type IV - Flat Grant Variation. A district's equalization aid amount is subtracted from the minimum amount. The district receives all its equalization aid but receives minimum aid only in the amount that it exceeds the equalization aid.

Type V - Flat Grant Variation. If equalization aid is less than the minimum amount, a district receives all its aid as minimum aid, and equalization aid becomes zero.

The last three Minimum Types yield the same dollar amounts to any one district; they differ only in labeling of the sources of the various aid amounts.

The rationale for the use of "minimums" in state aid formulas is that the state, having primary responsibility for the provision of education, should support some part of every district's total education bill, however small that contribution. Political pressures, too, are often the "justification" for retaining minimum grant provisions along with equalization formulas.

Save-harmless Provisions

Save-harmless or "save from harm" provisions are established to insure that the amount of state aid received by a district (either per pupil or total) under a new plan does not differ radically from payments received in a prior year. There are two sorts of save-harmless provisions: formula save-harmless applies only to the amount of equalization and minimum aids, and total save-harmless applies to the total aid amount.

The reasons for "save-harmless" range from political necessity to avoidance of sudden shifts in tax rates or expenditure patterns. The provisions may require that calculated aid for the new year shall not be less (per pupil or total) than that received in a prior year. If calculated aid is less than that amount, the difference is paid to the district under the label "save-harmless aid." Although the effect of a save-harmless provision is similar to that of a minimum, a minimum is a set amount that is equal for all districts (in a class) while the save-harmless level can vary from district to district.

Categorical Aid.

A final type of state aid that is commonly distributed to all school districts is categorical aid. Categorical programs are designed to address specific educational needs, such as transportation, compensatory education, vocational education, and so forth. Although categorical aid may be disequalizing as measured on a capacity equalizing basis, it may serve to meet student equity objectives. These grants encourage local districts to provide special services and programs, that they might otherwise be unwilling or financially unable to offer, by defraying part or all of the costs.

Categorical aid may be distributed through a number of different mechanisms. Aid may be paid to a district as a reimbursement for expenditures made for special activities. For example, a state might reimburse a school district for one-half of the actual cost in running a special education class, or for all of the cost of transporting students to and from school. Aid may be distributed as a flat grant; a state might give districts additional per pupil allocation for every student classified as needing specialized education. In these two cases, the determining factor for receiving categorical aid is the size of the educational need -- for example, the number of handicapped students -- rather than the wealth of the district. As a result, the distribution of some categorical grants may have a positive relationship to the distribution of wealth in the district. For example, if it is a state policy to pay 100% of the cost of transportation, a rich, low density suburb may receive a per pupil amount for transportation aid several times greater than that of the poorer, high density urban area which has limited transportation needs.

Categorical aid can be distributed in a way that equalizes for

wealth as well as for educational need. Several states now use "pupil weighting systems" for distributing categorical funds. Pupils are given additional weights according to their educational need and these pupil counts are then incorporated into the regular equalization formula. The result is that more state aid flows to those districts which have a relatively larger pupil count, and districts that are poor receive proportionately more aid for the additional pupils than those that are wealthy.

4. Intermediate Equalization Revenue

SFEMS includes an option which allows the user to specify revenues received by the district from an intermediate funding source. The source may be the Federal government, the county government, or another funding level other than the state. Equalization aid may be reduced by the amount of the intermediate revenues: data is stored in the Allocation Phase under two categories - "Intermediate Revenue applied" and "Intermediate Revenue not applied." Some of the intermediate revenue will not be applied if the total amount of intermediate revenues is greater than the amount of equalization aid.

The user may also choose to have intermediate revenues applied to minimum aid amounts as well as equalization aid.

An alternate method of accounting for intermediate revenues is to consider the funds as categorical amounts, and include them as a non-equalizing portion of a district's aid.

5. Behavioral Assumptions

In order to simulate the effects an allocation alternative will have on the distribution of wealth and resources within a state, the policy analyst requires knowledge of how a district is going to respond to a change in the state aid formula. If the district is allocated increased aid will it increase its expenditures? Or will it opt for a decrease in its tax burden?

At present, there is no empirical model on which to base expected district behavior. SFEMS approaches this issue by allowing the user to specify a set of behavioral assumptions. The assumptions fall into two broad areas: pre-simulation assumptions and response assumptions.

Pre-simulation behavioral assumptions are required when a district's aid is dependent on the level of expenditures or tax rate the district chooses. In this case the cost of the state aid program is a function of each district's choice.

In SFEMS, the researcher is allowed to specify different behavioral assumptions for up to twenty groups of districts. These groups can be defined on the basis of wealth, size, geographical location, tax rate or whatever criterion is chosen by the user. For each District Type, a separate effort level, minimum aid provision, formula aid save-harmless amount, intermediate revenue amount and, in fact, individual equalization plan can be specified.

In simulating an allocation alternative the policy analyst will be interested in the response to the change in state aid. A district which experiences a change in the amount of state aid received will respond by 1) holding either tax rate or expenditures constant and letting the other rise or fall as necessary, or 2) using a proportion of increased state aid to reduce taxes and the remainder to increase expenditures. The Prediction Group feature of SFEMS allows the researcher to apply different response assumptions to user specified groups of districts. Like the option de-

scribed above, this feature allows the user to define groups on the basis of size, wealth, effort, etc.. Up to five groups can be defined. Calculations of each group's Budget Year expenditures and tax rates will be made under different tax relief/expenditure increase assumptions and constraints.

Another feature of SFEMS which is used in conjunction with the response assumptions is the constraints provision. Under certain plans the districts behavior is partially regulated by law. There may be legally imposed tax rate minimums or expenditure maximums. The constraints option allows the user to impose maximums or minimums on tax rates or expenditures, different constraints can be established for each different Prediction Group.

Analysis Phase

In the Analysis Phase of SFEMS the research plan may be evaluated using an array of statistical techniques and data reporting methods. This phase can be used to evaluate the present state aid allocation plan or an allocation alternative which has been simulated in the Aid Allocation Phase. Thus the Analysis Phase might be used as the first step in studying the state -- by evaluating the present plan. After simulating allocation alternatives in the Aid Allocation Phase, the user can turn to the Analys Phase again to evaluate the simulated plan.

1. Analytic Methods

Sequenced Report.

The Sequenced Report offers a way to display data which enables the user to observe trends and patterns and provides summary statistics for the entire state as well as for groups of districts.

The user's options in the Sequenced Report include naming the variables for which data will be reported, deciding the sequence in which districts will be listed, and defining the groups of districts.

In a Sequenced Report, up to seven Report Columns may be established by the user. District data will be reported for every Report Column variable. The user can define a Report Column as simply a data field from the General File, or he can individually specify the numerator and denominator of the Report Column (e.g. equalized valuation per pupil) as well as the weight to be applied when calculating weighted means.

The districts may be sequenced in any of the following ways: code number, alphabetical, analytic variable. Groups of districts may be defined by intervals or equal pupil groups. The purpose of both interval grouping and

equal pupil grouping is to provide an intermediate level of aggregation -- between the individual district and the entire state -- by which to evaluate the effects of alternatives and to examine patterns for pertinent variables.

The Sequenced Report also allows the user to limit the analysis to a particular group of districts either by specifically defining a group to be analyzed or by eliminating undesired districts. This option may be useful when the user wishes to eliminate a number of districts which are outlyers or to eliminate a particular district, such as a large metropolitan area, which is known to skew statewide or interval statistics.

Another option allows the user to produce a Benchmark Report, one which lists percent differences in state aid or other variables resulting from two alternative school finance plans or between two years of one alternative plan.

Frequency Report

The Frequency Report presents frequency distributions and percentile distributions for up to nine variables per report. The calculation of the McLoone Index may also be requested.

Summary statistics are provided for both frequency and percentile distributions. As with the Sequenced Report, the user may specify that certain districts be eliminated from the Frequency Report analysis or that only particular districts be included in the analyses. In addition, the user may eliminate outlyers for a particular variable, without eliminating an entire district, by placing high value and low value limits on the range of values to be covered in the distributions.

Gini Report.

The Gini Report produces a Gini coefficient and up to twenty-five points by which a Lorenz curve can be plotted. The Gini coefficient is used to determine how equitably a state's educational resources are distributed with regard to district wealth or educational need. Gini analysis proceeds as follows: Districts are sequenced according to wealth per pupil (or other educational need unit). Then the cumulative percentages of the Gini variable selected by the user--a measure of educational resources such as aid or expenditure--are plotted against the cumulative percentages of students sequenced by wealth. The Gini coefficient indicates to what degree the distribution of wealth follows the same pattern as the distribution of aid or expenditures. Are the poorest 10% of the pupils getting 10% of the resources? Are the 50% poorest pupils getting 50% of the resources? In a less than equitable situation it is likely that the 50% poorest pupils are getting only 30% or 40% of the resources.

The Gini coefficient, ranging from 0.0 to 1.0, indicates the level of equity. A coefficient of 0.0 indicates total equity, a value of 1.0 indicates total inequity.

The Lorenz curve is a graphic representation of the Gini analysis. The Gini Report supplies up to twenty-five points by which to plot the Lorenz curve. It is often helpful to use a Lorenz curve in conjunction with the Gini coefficient in order to evaluate the equity of an alternative under study. For example, if the distribution being examined is more than equalizing, that is, if 20% of the poorest pupils receive 50% of the state aid, the Gini coefficient will be invalid. Only by examining the Lorenz curve can a user determine the validity of the Gini coefficient.